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THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. A double action piston assembly for an internal combustion engine said double action piston assembly including a combustion chamber having a first end and a second end and containing a double action piston connected to a power rod disposed within said combustion chamber, said combustion chamber having an up side and a down side, a first intake air port and a first exhaust port located in the up side of the combustion chamber, a second intake air port and a second exhaust port located in the down side of the combustion chamber, a valve assembly for opening and closing the first and second intake air ports and first and second exhaust ports, a compression chamber having a first end and a second end, said first end of the compression chamber connected to the second end of said combustion chamber, said power rod passing through the second end of said combustion chamber into said compression chamber and out the second end of said compression chamber, a second piston attached to said power rod within said compression chamber, said compression chamber having an up side and a down side, a first compression intake valve and a first compression exhaust valve located in the up side of the compression chamber, a second compression intake valve and a second compression exhaust valve located in the down side of the compression chamber, first conduit means connecting the first intake air port in the combustion chamber with the second compression exhaust valve in the compression chamber, second conduit means connecting the second intake air port in the combustion chamber with the first compression exhaust valve in the compression chamber, means to introduce water vapour into the combustion chamber located in each of the first and second compression intake valves to provide water vapour alternately into the up and down side of the compression chamber, means to alternately feed a fuel mixture into

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the up side and a down side of the combustion chamber and ignition means consisting of two or more spark means adjacent each of the first and second ends of the combustion chamber to ignite said fuel mixture, wherein at the end of each stroke of the double action piston, the first and second compression exhaust valves in said compression chamber are opened and the first and second intake ports and the first and second exhaust ports in said combustion chamber are open to permit air from the compression chamber to pass through the first and second conduit means into the combustion chamber for full scavenging of the combustion chamber.

2. A double action piston assembly according to claim 1 wherein the means to introduce water vapour into the combustion chamber comprises a venturi located in each of the first and second compression intake valves to provide water vapour alternately into the up and down side of the compression chamber.

3. A double action piston assembly according to claim 1 or 2 wherein the first end of the compression chamber helps to seal the second end of the combustion chamber where the power rod exits.

4. A double action piston assembly according to claim 1, 2 or 3 wherein the combustion chamber is lined with a ceramic sleeve.

5. A double action piston assembly according to claim 1, 2, 3 or 4 wherein a second end of the power rod is connected to a crankshaft of an engine.

6. A double action piston assembly according to any one of claims 1 or 5 wherein the first and second compression intake valves and first and second compression exhaust valves are check valves.

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7. A double action piston assembly according to any one of claims 1 to 6, wherein said power rod is disposed within said combustion chamber along its longitudinal axis.

8. A double action piston assembly according to any one of claims 3 to 7, wherein said power rod passes through the second end of said combustion chamber into said compression chamber along its longitudinal axis.

9. A double action piston assembly according to any one of claims 1 to 8, wherein said double action piston disposed within said combustion chamber is connected to one end of a power rod.